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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,209	09/28/2007	Andreas Caduff	U 016310-9	9831

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LADAS & PARRY LLP
1040 Avenue of the Americas
NEW YORK, NY 10018-3738

EXAMINER
WESTON, TIFFANY C

ART UNIT	PAPER NUMBER
3735	

NOTIFICATION DATE	DELIVERY MODE
07/21/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

nyuspatactions@ladas.com
nymail@ladas.com

Office Action Summary	Application No.	Applicant(s)	
	10/580,209	CADUFF ET AL.	
	Examiner	Art Unit	
	TIFFANY WESTON	3735	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07/17/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-12, 16, 20-31* is/are rejected.

7)☐ Claim(s) *13-15,17-20 and 32-35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :05/22/06, 08/04/06, 10/03/07, 11/15/07, 01/15/10.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 recites the limitation "the method" in preamble of the claim. There is insufficient antecedent basis for this limitation in the claim. This should be changed to reflect its dependency on a device.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16, 21-26 and 28-31 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 02/069791 to Schrepfer et al ("Schrepfer").

Regarding claim 16, Schrepfer discloses a device for measuring a property of a living tissue comprising an electrode arrangement (Figure 3); a signal source (1); and processing circuitry (8) comprising

measuring means for measuring a series of measurement values at the series of frequencies, each measurement depending on the dielectric properties of the tissue at one frequency (page 5, lines 3-20, *i.e. to measure concentration of a substance in the body fluid of the specimen, microprocessor can initiate a measurement cycle…dependence of A0 on the dielectric constant and on the loss or conductance of the fluid in the specimen is stronger than at off-resonance frequencies*);

fitting means for fitting a function at their giver frequencies or to values derived from the measurement values at their given frequencies, and determining the parameters determining said property (page 5, lines 21-37 and Figure 8, a graph showing the means fit function of frequencies to measurements derived from signals);

and means for using at least part of the parameters for determining said property (page 5, lines 27-37, *i.e. specific impedance of the body fluid...are a function of the properties and concentration of the salty components of the human body*).

Regarding claim 21, Schrepfer discloses a device for measuring a property of a living tissue comprising of an electrode arrangement (Figure 3); a signal source (1); processing circuitry (8); wherein the electrode arrangement comprises a strip electrode (18), an outer electrode (19) wherein the outer electrode comprises two lateral sections (29) extending parallel to and on opposite sides of strip electrode.

Regarding claim 22, Schrepfer discloses an insulating layer covering (17) said electrode and at least part of said first section of said outer electrode (Figure 2).

Regarding claim 23, Schrepfer discloses an annular outer electrode (Figure 2).

Regarding claim 24, Schrepfer discloses a device for measuring a property of a living tissue comprising of an electrode arrangement (Figure 3); a signal source (1); processing circuitry (8); wherein the electrode arrangement comprises at least one electrode placed on an out side of an electrically insulating substrate (page 6, lines 29-32, *i.e. an electrically insulating substrate with a strip electrode and a top or ring electrode arranged on an outer side*); at least one through-contact extending through and connecting said at least one electrode (page 6, lines 33-36, *i.e. a plurality of through-contacts are provided to connect ring electrode to bottom electrode*); wherein an outer side of each through-contact is covered by a physiologically inert material (page 7, lines 27-31, *i.e. cover layer is preferably of a hard, moisture- and salt-impervious material*).

Regarding claim 25, Schrepfer discloses a device measuring wherein the outer side of each through-contact is covered by a material selected from the group of glass, ceramics, plastics, and noble metals (page 7, lines 27-31, *i.e. material such as glass, ceramics, a polycarbonate or diamond-like carbon*).

Regarding claim 26, Schrepfer discloses a device wherein electrode arrangement comprises at least a first electrode for being brought into direct

contact with said body (page 7, lines 33-37, *i.e. ring electrode comes into contact with the user's skin*).

Regarding claim 28, Schrepfer discloses a device wherein the electrode arrangement is a part of a resonant circuit (page 2, lines 20-26, *i.e. the electrode forms part of a resonant circuit, which is operated at or close to its resonance frequency*)., wherein a resonance frequency of the resonant circuit lies in the given frequency range (page 5, lines 6-14, *i.e. sweep should start at a frequency fmin below the expected resonance frequency of the resonant circuit and extend to a frequency fmax*).

Regarding claim 29, Schrepfer discloses an electrode arrangement forms a capacitor and is arranged in series to or parallel to an inductance (5, as shown in Figure 1).

Regarding claim 30, Schrepfer discloses an electrode arrangement on a flat substrate (Figure 2 and 3).

Regarding claim 31, Schrepfer discloses a method for measuring a property of living tissue comprising:

applying an electrode arrangement to the tissue (page 7, lines 36-37, *i.e. ring electrode come into contact with the user's skin*);

generating an AC voltage at a series of frequencies in a given frequency range and applying the AC voltage to said electrode arrangement, measuring a series of measurement values at the frequencies, each measurement value depending on dielectric properties of the tissue at one frequency (page 5, lines 3-37, *i.e. initiate a measurement cycle consisting of a frequency sweep of*

VCO…the dependence of A0 on the dielectric constant…is stronger than at off-resonance frequencies, which allows a sensitive measurement of the liquid's response to the electric field);

fitting a function with parameters to the measurement values at their frequencies, or through values derived from the measurement values at their frequencies, and determining the parameters (Figure 8 and page 5, lines 21-37, *i.e. specific conductivity and the dielectric constant in a frequency range...are a function of the properties and concentration of the salty components of the human body*);

determining said property by using at least part of the parameters (page 5, line 21 to page 6, line 11, *i.e. glucose has a similar range of size and is present in concentrations giving rise to a well detectable variation of the amplitude A0 resonance frequency*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/069791 to Schrepfer et al ("Schrepfer") in view of US 2002/0119759 to Hahn.

Regarding claim 1, Schrepfer teaches a device for measuring a property of living tissue, in particular glucose level comprising of an electrode arrangement (Figure 3); a voltage-controlled oscillator (1); processing circuitry (8), but does not teach the VCO comprising of at least one amplifier and at least one tank circuit. Hahn teaches a VCO comprising of at least one amplifier (47,48) and at least one tank circuit (42, 45; 44, 46) comprising at least one voltage controlled capacitor (45, 46). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the VCO of Hahn with the device of Schrepfer, because the VCO achieves that same variability of frequency and voltage using similar electrical components.

Regarding claim 2, Schrepfer teaches the device of claim 1, but does not teach at least one voltage-controlled capacitor is a varactor diode. Hahn teaches the voltage-controlled capacitor is a varactor diode (paragraph 30, *i.e. varicaps 45 and 46*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include varactor diodes as the voltage-controlled capacitors as taught by Hahn with the device of Shrepfer because they

are one of the most common types capacitors that are meant to be voltage-controlled.

Regarding claim 6, Schrepfer teaches a device for measuring a property of a living tissue, but does not teach the use of a filter for frequency control voltage. Hahn teaches the use of a filter for frequency control (5 and 12, paragraph 26, *i.e. high pass filter is optional and achieves further filtering out of the fundamental frequency signal provided by the frequency generator*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a filter, as taught by Hahn, with the device of Schrepfer, because a filter is common to reduce noise and other unwanted activity in the signal.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schrepfer in view of Hahn as applied to claim 1 above, and further in view of US 3,482,167 to Hart et al ("Hart").

Regarding claim 3, Schrepfer and Hahn teach a device for measuring a property of a living tissue containing at least one amplifier, but do not teach a dual gate FET wherein one of the gates is connected to the gain control signal. Hart teaches the use of a dual gate FET with one gate connected to gain control signal in an automatic gain control circuit (column 2, lines 3-8, *i.e. take advantage of the second gate transconductance characteristic of a multiple insulated gate field-effect transistor and provide an amplifier stage employing said transistor as the active element*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a dual gate

FET as a part of a gain control signal, as taught by Hart with the device of Schrepfer and Hahn, because it is well known in the art that the transconductance characteristic can be useful in amplification.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schrepfer in view of Hahn, as applied to claim 1 above, and further in view of US 3,803,828 to Keeler et al ("Keeler").

Regarding claim 4 Schrepfer and Hahn teach a device comprising of a voltage controlled oscillator with two amplifiers and two tank circuits, but do not teach the phase shift operation of the tank circuits. Keeler teaches the phase shifted tank circuits (column 2, lines 38-51, *i.e. the tank circuit has a phase shift of180 degrees referred to the ground*) for changing the oscillating frequency (column 3, lines 1-13, *i.e. phase sifted signal cause a corresponding change in the oscillating frequency of the system, and, thus, a precise adjustment in output frequency may be made by changing the value of the resistor*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a phase shift for the tank circuits, as taught by Keeler with the device of Schrepfer and Hahn, because the phase shift allows for a precise measurement of oscillating frequency.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schrepfer in view of Hahn, further in view of Keeler, as applied to claims 1 and 4 above, and further in view of US 2003/0095420 to Imamura.

Regarding claim 5, Schrepfer, Hahn, and Keeler teach a device for measuring property of a living tissue, but do not teach a transformer arranged

between amplifier outputs. Imamura teaches FET outputs that are connected to the windings of a transformer (Figure 1) to act as a switch for resonance. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a transformer between the amplifier outputs, as taught by Imamura with the device of Schrepfer, Hahn, and Keeler, because the transformers and amplifiers then act as a switch.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrepfer in view of Hahn, as applied to claim 1 above, and further in view of US 2002/0060613 to Pao et al ("Pao").

Regarding claims 7 and 8, Schrepfer teaches a device for measuring a property of living tissue, but does not teach a feedback loop for controlling the control signal. Pao teaches a positive feedback loop for changing the oscillation as needed to maintain inside of a range based on previous outputs (paragraphs 30-34, *i.e. dielectric phase shifter is chosen to have a 180-degree phase shift in the feedback loop, and to synchronously track the feedback phase shift needed by the resonator for oscillation*). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a feedback loop as taught by Pao, with the device of Schrepfer and Hahn, because the feedback loop allows for an accurate measurement of the dielectric properties that are based on the frequency.

Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrepfer in view of US 5,212,817 to Atkinson.

Regarding claim 9, Schrepfer teaches a device for measuring a property of living tissue comprising an electrode arrangement (Figure 3); a signal source (1); processing circuitry (8), but does not explicitly teach the components of the processing circuitry. Atkinson teaches the use of at least one diode, an ADC, a filter, and a processor all as part of processing circuitry (column 13, lines 61-67). These are all typical elements in processing data. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include these components as part of the processing circuitry, as taught by Atkinson with the device of Schrepfer, because these components are typical in processing to obtain the most accurate signal.

Regarding claims 10-12, Schrepfer teaches a temperature dependent calibration data for accurate measurements on the microprocessor (page 6, lines 7-18, *i.e. in order to obtain high accuracy over a wide temperature range, temperature sensor is brought into the thermal contact...used to correct the obtained result*).

Allowable Subject Matter

Claims 13-15, 17-20, and 32-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,175,752 to Say et al, in regards to calibration data and processing circuitry.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIFFANY WESTON whose telephone number is (571)270-5177. The examiner can normally be reached on Monday thru Thursday, every other Friday, 7:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Miranda Le can be reached on (571) 272-4112. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. W./
Examiner, Art Unit 3735

/Miranda Le/
Supervisory Patent Examiner, Art Unit 3735